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ABSTRACT

This paper describes the results of a study of the microcomputer use patterns reflected by more than 13,000 users' records from the microcomputer laboratory at Western Kentucky University for 1983 to 1986. The data analyzed focused on: (1) numbers of users; (2) frequent user groups; (3) sex differences; (4) prime time usage; (5) the use of software in various academic areas and use of general programs and utilities; (6) length of time students used the computer; and (7) whether the computer programs used were developed in-house or came from publishers. Major findings indicated that: (1) the most frequent users were freshmen and seniors; (2) prime times for use were between 10:00 and 11:00 a.m. and 1:00 and 3:00 p.m.; (3) 65% used computer-assisted instruction (CAI) programs, 20% used utility programs, and 9% used the computers as a tool; (4) 38% used in-house programs and 62% used publisher programs; (5) the mean usage time was 83.79 minutes; and (6) 55% of the users were male and 45% were female. It was also found that users in science were the most numerous (49%), followed by users of general programs and utilities such as word processing, examination preparation, and computer literacy programs (31%). The third most frequently used field was computer science (10%), and the number of users in the humanities was 4%. The paper concludes with suggestions for classroom teachers and curriculum designers for improving computer programs. (DJR)

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Usage Patterns at Western Kentucky University Microcomputer Lab (U.S.A.): Past and Present

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ABSTRACT

Usage Patterns at Western Kentucky University Microcomputer Lab (U.S.A.): Past and Present

This presentation offers information on improving the management of university microcomputer labs and provides insights into the future uses of such labs. It also provides guidelines and information in formulating new goals and directions for microcomputer labs in higher education.

Administrative data on usage patterns in a university microcomputer lab for the years 1983-1986 will be presented. The analysis will focus on the relationship between software utilization and user characteristics (i.e. year in school, major, etc.).

Managers of microcomputer labs will be provided with information on current lab use patterns and projections of future needs (i.e. hardware, software, etc.)

Since microcomputers have been introduced in education, there has been significant growth in the purchasing of microcomputers throughout all school levels in the States. It is estimated that by the end of 1986, 96 percent of the American schools will have at least one microcomputer (Ingersoll & Smith, 1984).

Because of the newness of computers and the rapid rate of change, we are only slowly beginning to understand the full implications of computers in education and only slowly learning how to utilize this important tool (Bork, 1981). Carefully drawn research studies, long term plans, efficient feedback channels, observations on learners, and effective communication among researchers, designers, and teachers are essential in order to succeed with computer applications in education.

Now is a good time to examine how learners are using this new instructional medium (i.e. computers) in real settings not in the controlled or experimental environment.

In order to provide insight, it might be valuable to examine usage patterns of students in the past and at present.

The total number of microcomputer users has reached 11,583 since the labs inception in January, 1983 up to November, 1985 at Western Kentucky University. Each time a student came to the computer lab and used material, that encounter was counted as one user. The number of computer software users has doubled in 1984 compared with the previous year, 1983. In 1985, the number of users had increased 1.25 times compared with that of 1984. In the Fall of academic year, 1985, number of users increased tremendously and reached 2,620. This past Fall semester, the number of users was

2,244.

For the Spring and Summer semesters in 1983, freshmen were the most frequent user group. The number of freshman users was almost 11 times larger than that of seniors. In the years of 1983 and 1984, freshmen again were the most frequent user group. During the academic year 1985, seniors appeared as the most frequent user group.

The number of graduate student users has increased significantly. The number of users among faculty and staff has increased up to Summer, 1985. Since then the number of users has decreased. This may be a result of increased computer ownership among faculty members. Over the last two years, the University financially supported faculty members by providing interest free loans for purchasing microcomputers.

Is there any sex difference among computer users? The number of male users was 6,388 (55%) and the number of female users was 5,195 (45%). Chi-square analyses found no significant gender difference among users.

If a microcomputer lab does not have enough staff to be open for 24 hours per day, then when might be good times to keep the lab open? In order to see when users are coming to use computers, their check-in time was recorded and analyzed. In general, the prime times were between 1 and 3 o'clock in the afternoon and 10 and 11 o'clock in the morning. During this period of time, 44% of all users checked in. Around 5 o'clock, the number of users was very low. However, around 7 o'clock in the evening, the number of users went up again.

User's check-in time was also analyzed by the day of the week.

Most of the users checked in during the weekdays, particularly Monday through Wednesday which constituted 58% of total users. On Friday, 10 to 11 is the busiest period, during the afternoon few people showed up to use the lab. On Saturday, the number of users was 4% of total users. On Sunday afternoon, a greater number of students signed up for the lab.

The data were also analyzed to see how many users employed software in certain academic areas. For all users over the past three years, users in science ranked the highest making up 49% of all users followed by 'general programs' which was 31%. General programs include word processor, examination preparation series, and computer literacy programs. The third frequently used field was computer science which was 10% and number of users in humanities was 4%.

Sixty-five percent of students used CAI programs at the Center, 20% used utility programs such as word processor, and only 9% of students used computers as a programming tool. Three percent of students used computers as a computer assisted drafting (CAD) tool.

Among computer programs which were used by students, 38% were in-house developed and 62% were purchased from publishers. Most of the in-house developed programs were in science and had been developed by Western faculty members.

How long are students using the computer at one time? The mean usage time was 83.79 minutes (SD = 68.04). The mean usage time of male students was 84.49 minutes (SD = 69.42) and for female students it was 82.92 minutes (SD = 66.31).

The shortest use time was 5 minutes and the longest use time was 13 hours. The mean amount of usage time for programing was

89.48 minutes, for CAI it was 69.97 minutes, for CAD it was 90.00 minutes, and for word processor it was 107.62 minutes.

SUGGESTIONS AND RECOMMENDATIONS

Through operating a microcomputer lab and observing users for the last three and half years, this author has learned several things, one of which is microcomputer hardware is too soft and microcomputer software is too hard to use. Several microcomputer systems were down one after the other on the same day and several pieces of software were either damaged or erased due to mishandling by users. The following questions and issues were raised and suggestions are made on the basis of these experiences and observations.

Students who entered the college used computers frequently their first yesr. However, when they progressed to sophomore and junior classes, their usage of computers declined. This phenomena raises several questions. In the past, computer related courses in high school were limited to certain groups of students who were good in math or science. The students, who are not interested in these two subjects, are only exposed to computers briefly on different occasions. Through such intermittent exposure to computers, students were unable to develop understanding of what a computer is, how it works, and how it can be utilized. Therefore students were not interested in using computers unless they are told to. Furthermore, no courses are offered on computer awareness for those who are not majoring in computer science. As a consequence of this, big gaps existed between users and non-users of computers, and it will widen in future unless educators take some measures to resolve the problem.

Research studies should be done on the efficacy of computer programming courses in high school. The studies should be designed to find out whether knowledge and experiences obtained through introductory level programming courses can be transferred later to structured and advanced programming courses in college.

Among the users, 55% were male and 45% were female. From Fall 1984, male students (63%) were exceeding female students (37%). Particularly, in the junior and senior years, there was a difference between gender. Why did more male students use computers in the senior classes? Are 'stereotype' social and cultural expectations causing this gap? Is it true that the longer female students are exposed to computers, the less interested and motivated they are in using computers? Is it related to the findings that early school years, there is no gender difference in performance in math and science, however, when they progress to upper classes, there is a difference in performance between male and female students in math and science? Further research is needed on this hypothesis.

The following suggestions are made to classroom teachers and curriculum designers.

Suggestions to Classroom Teachers

1. Emphasis should be placed on handling and caring for computer hardware and software in computer programming and computer assisted classes in order to avoid a "time bomb" effect.
2. Provide necessary information on health hazard issues.
3. So far, there are no user-friendly software, so be a "user-friendly" teacher in your classroom.
4. Do a demonstration in the classroom, and provide a hand-out.

Suggestions to Curriculum Designers

1. Reexamine curriculum of computer literacy courses. What is more important and relevant to non-computer science major students: word processor or a BASIC course?
2. Reconsider high school level computer related courses.
3. Require typing classes from elementary to senior high school regardless of gender.
4. Train elementary and secondary school teachers in computer assisted instruction because they play a major role in the success of computer applications in education.

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